Factorial Validity and Group Invariance of the Portuguese Short Version of the Social Physique Anxiety Scale in Adolescents

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1. INTRODUCTION

♦ *Social Physique Anxiety* (SPA) is a subtype of social anxiety that occurs as a result of the prospect or presence of interpersonal evaluation involving one's physique (Hart et al., 1989, p.86). It represents an emotional reaction to perceived or received assessment of own body and it is construed by appraisals of social interactions (Sabiston et al., 2007).

♦ SPA has been associated with health-related behaviors (e.g., exercise, dietary habits, smoking) and psychosocial functioning (e.g., self-esteem, body satisfaction , Davidson & McCabe, 2006).

♦ Particularly important in early adolescents due to greater risk of body-related concerns resulting from heightened self-consciousness, concerns about peer evaluation and social conformity (Davidson & McCabe, 2006).

♦Purpose:

♦ To examine the factorial validity and group invariance of the 7-items short version of the Social Physique Anxiety Scale (SPAS; Motl & Conroy, 2000) for Portuguese adolescents.

♦ To determine construct and concurrent validity of the new Portuguese version.

2. METHODS

Participants

♦ Nationally representative sample of 3330 8th- and 10th-grade students (mean =15.07 ± 1.34 years; min=12; max= 20)

♦ Girls 53%; boys 47%

Variables

- Satisfaction with weight (SW)
  "At present are you on a diet or doing something else to lose weight?" (1 = *no, my weight is fine*, 2 = *no, but I should lose some weight*, 3 = *no, because I need to put on weight*, 4 = *yes*).
- Physical activity (PA)
  "On how many days, during the last seven days, were you physically active at least 60 minutes?" (*0 = zero days*, to *7 = seven days*)
- Perception of body (PB)
  "What do you think about your body?" (1 = *much too thin*; 2 = *thin*; 3 = *normal*; 4 = *fat*; 5 = *much too fat*).
- Body mass index (BMI)
  Self-reported weight and height (Kg/m^2): normal, overweight and obese (Cole, Bellizzi, Flegal & Dietz, 2000).

Procedures

♦ Health Behaviour in School-aged Children (HBSC) 2006 survey. Schools and pupils selected by stratified random procedure, representing the five national educational regions.

♦ Surveys administered by teachers; participation was voluntary and anonymity was assured. 87% return rate.

Data Analysis Procedures

♦ Exploratory factor analysis (N = 1000) followed by confirmatory factor analysis (N = 2330).

♦ Configurational invariance and metric invariance:
- gender – male (n = 1558) vs. Females (n = 1724);
- grade – 8th grade (n = 1709) vs. 10th grade (n = 1573);
- SW - adolescents who are not on a diet (n = 1787) vs. adolescents who are or believe they should be on a diet (n = 1463);
- PA - adolescents who do not achieve WHO recommendations (n = 1954) vs. adolescents who achieve recommendations (n = 838);
- PB - normal (n = 1554) vs. overweight (n = 1149),
- BMI - normal (n = 2284) vs. overweight or obese (n = 495).

♦ One-way ANOVAs with Scheffé post-hocs for construct and concurrent validity.

3. RESULTS

Exploratory Factor Analysis

Final solution (Principal Component Analysis)
- 6 items (i.e., 3,4,6,7,9,10); Eigenvalue = 3.65; 61.3% of the variance; α= .87
- All factor loadings >.64, except item 8 ("I am comfortable with how fit my body appears to others"; .11).

Confirmatory Factor Analysis

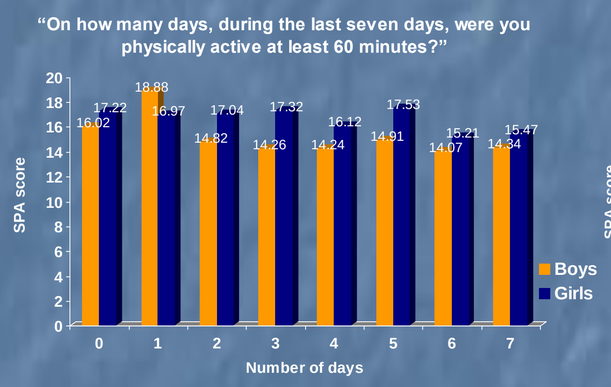
6-item model showed appropriate fit to the data (robust solution):
- Satorra-Bentler $\chi 2$ = 128.62, df = 9, p<.001; CFI = .977; NNFI = .962; RMSEA = .081 (90% C.I.: .069 - .093); SRMR = .039.

3. RESULTS (Cont'd)

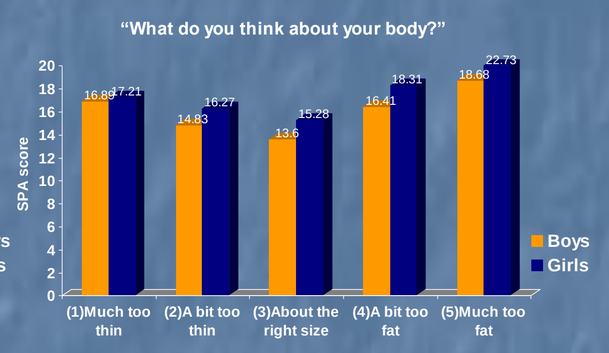
Table 1 – Factorial invariance between groups.

	CFI[a]	χ^2 (df)[b]	RMSEA (90% CI)[a]
Males vs. Females			
Unrestricted	.994	6.71*** (16)	.0.44 (.033-.056)
Restricted	.998	107.58*** (21)	.053 (.043-.053)
8th vs. 10th grade			
Unrestricted	.993	66.22*** (16)	.047 (.036-.059)
Restricted	.992	72.28*** (21)	.04 (.034-.054)
Diet vs. no diet			
Unrestricted	.994	57.31*** (16)	.0.44 (.032-.056)
Restricted	.993	67.73*** (21)	.040 (.030-.051)
Inactive vs. physically active			
Unrestricted	.991	66.27*** (16)	.0.54 (.041-.058)
Restricted	.990	75.58*** (21)	.049 (.037-.061)
Perception of normal body vs. fat body			
Unrestricted	.992	60.19*** (16)	.048 (.045-.061)
Restricted	.991	69.75*** (21)	.044 (.033-.055)
Normal BMI vs. High BMI			
Unrestricted	.996	34.13*** (16)	.035 (.018-.051)
Restricted	.996	37.53*** (21)	.029 (.031-.044)

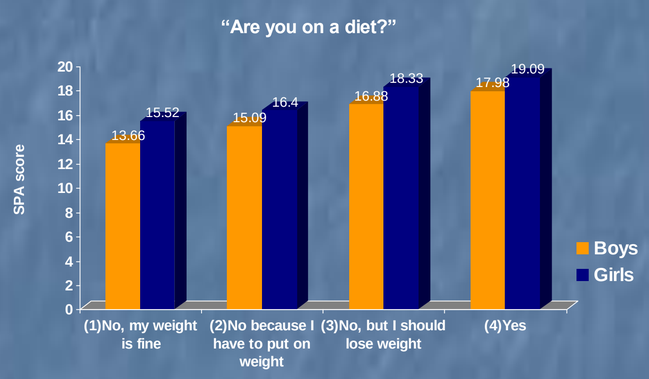
a – Robust; b - Scaled Chi-Square (Yuan-Bentler); * p<.05; ** p<01; *** p<.001.



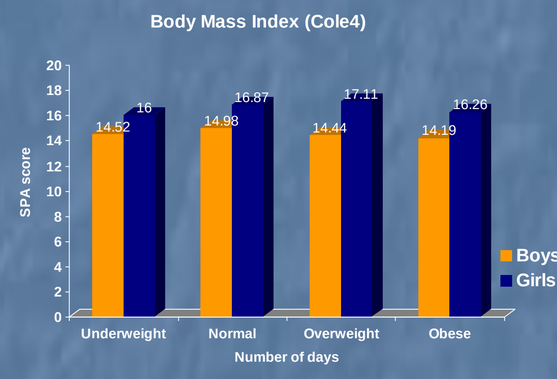
PA: F(6,2939) = 4.56, p < .001, η2 = .011
Gender x PA: F(6, 2939) = 71.31, p < .05, η2 = .002; 0,1,2 > 7; 1 > 4,6



Think about body: F(4, 2958) = 58.87, p < .001, η^2 = .074
3< 1,2 < 4 < 5; 2 < 4 < 5



Gender: F(1, 2960) = 33.12, p < .001, η2 = .011;
On a diet?: F(3, 2960) = 74.05, p < .001, η^2 = .07; 1 < 2 < 3,4



COLE4: F(3, 2754) = 1.19, p = .31

Figure 1 – Social physique anxiety scores for boys and girls as a function of a) physical activity levels, b) thoughts about body, c) diet status, and d) categorisation of BMI.

4. DISCUSSION AND CONCLUSION

♦ The exploratory and confirmatory analysis were consistent with the original unidimensional model (Motl & Conroy, 2001), but the final solution was composed of 6 items. This different structure is likely to represent cultural differences (Hagger et al., 2007; Lindwall, 2004).

♦RMSEA was lower than .05 (.032) and the upper limit of 90% confidence interval was lower than .06 which shows "a good degree of precision" (Byrne, 2001, p.85).

♦The current 6-item structure appears to be invariant across a number of group. Even though $\chi 2$ was significant while comparing unconstrained and constrained models, which can be attributed to a large sample (Schumacker & Lomax, 1996), the Comparative Fit Index (CFI) for both models were very high (above .99) in all groups and changes were lesser than .01 (Cheung & Rensvold, 2000).

♦ Consistent with previous research (e.g., Hart et al., 1989; Motl & Conroy, 2001) , females, adolescents who are less active, those who are dieting or think they should lose weight, and those who think their body is much too fat scored significantly higher is SPA than their counterparts. However, no differences were found according to BMI. Self-perception may be more important than actual measurement of BMI developing SPA.

♦ The current 6-item Portuguese short version of the Social Physique Anxiety Scale can be used by researchers in analysing and interpreting scores of SPA across a variety of samples in Portuguese adolescents; this instrument can be used in cross-cultural research.

5. REFERENCES

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